

Hello, and I am happy to be back. So, this topic covers the various devices and techniques used for suctioning Airways. There are 18 slides plus a video at the end. Before we start the lesson, here are four important suctioning terms you will need to know.

The first term is Airway Suction. It is the removal of airway secretions and foreign material by artificial means, using applied negative pressure.

Next is a Yankauer Suction Catheter. This is A rigid suction tip, used to aspirate secretions from the oropharynx.

The third is Oropharyngeal Suction or OP. This requires the use of an airway adjunct or OPA.

Number four is Nasopharyngeal Suction or (NP). NP may be undertaken directly via the nostril without an airway adjunct. If repeated suction is anticipated, a nasopharyngeal airway should be utilized.

Note that Suction is an invasive procedure, and should NOT be carried out on a routine basis. But, suctioning is an integral part of the management of intubated or ventilated patients.

As you go through the lesson, be sure you fully understand the assessment process. And please remember to schedule yourself for the skills validation lessons. The correct technique is vital to successful outcomes.

Good Studying.
Consider using: https://youtu.be/AAxcVqSizqw

What is Suctioning?

- Obvious liquids (blood, secretions, vomitus) must be removed from airway to prevent aspiration into lungs
- Use vacuum device to remove liquids from airway



Oral Suction

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Suctioning is the use of a vacuum device to remove foreign substances from the airway.
Obvious liquids such as blood, secretions, and vomitus, must be removed from the airway to prevent aspiration into the lungs. We then use a vacuum device to remove liquids from the airway.
This lesson focuses on Oropharyngeal and nasopharyngeal suction. We use techniques to remove excess secretions from the airways that cannot be removed by a patient's own spontaneous efforts.

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Indications of the need for Suctioning

- Audible, upper airway transmitted sounds
- Muffling of a patient's voice by secretions
- Transmitted sounds when listening to the chest wall with a stethoscope
- Tactile fremitus or a vibration felt on the patient's chest during vocalization
- A Moist, rattling cough



Nasal Suction

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I would like to spend some time now, discussing when and why to suction. So, let's evaluate the indications as to when it is appropriate.
Nasotracheal and orotracheal suction should only be undertaken when other less invasive techniques have proved unsuccessful.
During a patient assessment, there are five key indicators that secretions are present in the upper airway, which may be accessible via suction. These include:

1. Audible, upper airway transmitted sounds.
2. Muffling of a patient's voice by secretions.
3. Transmitted sounds when listening to the chest wall with a stethoscope.
4. Tactile fremitus or a vibration felt on the patient's chest during vocalization.
5. A moist, rattling cough.

When these signs are present and the patient is unable to clear secretions via a voluntary, stimulated, or assisted cough - or by other means (e.g. physiotherapy techniques), suction may be indicated.

Contraindications & Precautions

- Pharyngeal obstruction
- Acute pulmonary edema
- Base of skull fractures (use OPA only, NPA / nasal suction contraindicated)



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So, before we start to suction, we must if possible, review the patient's medical history, to identify contraindications and/or precautions to the insertion of an NPA or O P A . You may also review the prior lesson on Airway Adjuncts which offers complementary guidance.

There are three red flags to be aware of.

1. A Pharyngeal obstruction.
2. The Presence of acute pulmonary edema.
3. Base of skull fractures which indicates the use of an Oropharyngeal Airway only. Hence, NPA and nasal suction are contraindicated.

There are also the following eight pre-cautionary conditions to consider:

1. Bleeding risk (low platelets, raised INR, raised APTT, coagulopathy, warfarin).
2. Hemodynamic instability.
3. Hemoptysis.
4. Acute face, neck, or head injury.
5. Septal deviation and/or prior nasal surgery.
6. Children.
7. False teeth.
8. Recent oral surgery.

Suction Devices | Mounted Suction Systems

- Installed near head of stretcher
- Furnish air intake of at least 30 liters per minute
- Generate vacuum of no less than 300 mmHg when collecting tube clamped



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We generally use two types of Prehospital suction units. They are (1) portable, and (2) vehicle-mounted. Both types depend on essentially the same three components.
First, catheters and tubing.
Second, a collection canister.
And third, the ability to create a vacuum, typically with a positive displacement pump and power source.
Each of these components is necessary to create suction. They must be checked each shift and after every use to be sure they are ready to go when needed.
The picture on this slide shows a vehicle-mounted unit, usually Installed near the head of the stretcher. A typical unit will furnish air intake of at least 30 liters per minute. And will generate a vacuum of no less than 300 millimeters mercury, when the collecting tube is clamped.
Start to think about the capabilities and limitations of portable suction devices compared to wall-mounted units.

Suction Devices | Portable Suction Units

- Same requirements as mounted
- Oxygen- or air-powered or powered by batteries/electricity
- Manual



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Here is an example of a portable suction unit. The requirements are the same as the mounted units. They may be Oxygen or air-powered. And also battery or electrically powered. And there are manual systems as well. Be sure to know the types of units your department uses.

And please, don't forget to check the equipment before using it. These Four important steps will be helpful:

1. Make sure the tubing is connected properly and the integrity of the tubing hasn't been compromised.
2. Check to see that the canister and lid are maintaining an airtight seal;
3. Of course, the motor must be functioning properly. Check the manufacturer specifications for the vacuum pressure, and be sure your unit conforms to specifications;
4. Assure that the batteries are fully charged and connected correctly.

Finally, take the time to Tour the various types of ambulances you may ride to understand the suctioning equipment options.

Suction Systems | Devices | Tubing, Tips, and Catheters

- System
  - ✓ Suction device
  - ✓ Tubing
  - ✓ Suction tips
  - ✓ Suction catheters
  - ✓ Collection container
  - ✓ Container of clean or sterile water
- Two types
  - ✓ Flexible suction catheters
  - ✓ Rigid pharyngeal suction tip







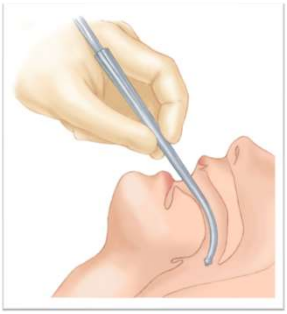
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So, let's review the Suction System. It consists of a Portable or a Mounted Suction Device, attached to Tubing, tips, and catheters. There are two main types of attachments. First, a rigid pharyngeal suction tip, which is also known as a Yankauer tip. The other is a Flexible suction catheter.
You will also need to have in your suction tool kit, a collection container, a container of clean or sterile water, and of course, your PPE gear.

Tubing, tips, and catheters | Rigid Pharyngeal Suction "Yankauer" Tip

- Larger bore than flexible catheters
  - ✓ Better for thick secretions
- Process – first steps
  - ✓ Place the convex side of the rigid tip against the roof of the mouth
  - ✓ Insert just to the base of the tongue





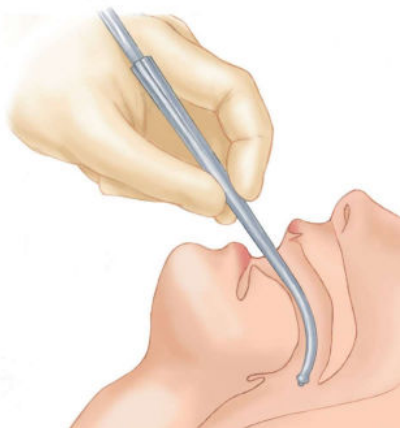
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Let's now discuss how to use the tools. Then we will double back to go through the entire process of suctioning.
Here, we have a rigid pharyngeal suction "Yankauer" tip. It offers a larger bore than flexible catheters and is better for thick secretions.
The first two steps in the process are:
First, place the convex side of the rigid tip against the roof of the mouth.
Then, insert just to the base of the tongue.

Using a Rigid Pharyngeal Suction Tip (Yankauer)

- Suction only as far as you can see
- Do not lose sight of distal end
- Careful insertion helps prevent gag reflex or vagal stimulation

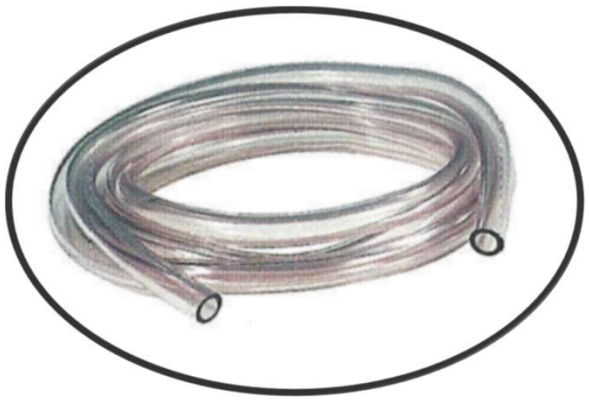


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Continuing with the use of the Yankauer tip.
Now, Suction only as far as you can see.
Do not lose sight of the distal end.
And know that Careful insertion helps prevent a gag reflex, or vagal stimulation.

Suction Devices | Flexible suction catheters

- Not typically large enough to suction vomitus or thick secretions
- May kink
- In event of copious, thick secretions consider removing tip or catheter and using large bore, rigid suction tubing



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Now, some considerations regarding the Flexible suction catheters. First, it is not typically large enough to suction vomitus or thick secretions. Note that it may kink. Hence, in the event of copious, thick secretions, consider removing the tip of the catheter and using a large bore, rigid suction tubing.

Suction Devices | Tubing, Tips, and Catheters

- Flexible suction catheters
  - ✓ Come in various sizes identified by a number "French"
  - ✓ Larger the number, larger the catheter
- Designed to be used when a rigid tip cannot be used
- Can be passed through a tube such as the nasopharyngeal or endotracheal tube
- Can be used for suctioning the nasopharynx



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So, flexible suction catheters, come in various sizes identified by a number followed by the suffix "French". Intuitively, the larger the number, the larger the catheter.
These catheters are designed to be used when a rigid tip cannot be used.
And they can be passed through a tube such as the nasopharyngeal or endotracheal tube.
Plus, they may be used for suctioning the nasopharynx.

Suction Devices | Flexible Suction Catheters

- Measured in similar way as OPA
- Measure the Length of catheter that should be inserted into patient's mouth either:
  - ✓ From the patient's earlobe to the corner of the mouth
  - ✓ Or from the center of the mouth to the angle of the jaw



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Flexible suction catheters are fit to the patient in a similar way as the Oropharyngeal Airway.
You can measure the length of catheter, that should be inserted into patient's mouth in one of two ways:
First way; measure from the patient's earlobe to the corner of the mouth.
Or the second way by measuring from the center of the mouth to the angle of the jaw.

Techniques of Suctioning | Preparation

- Put on PPE gear: Includes protective eyewear, mask, disposable gloves
- Position the patient
- Hyperventilate the patient
- Prep your suction system gear for the procedure
- Assess the Patient

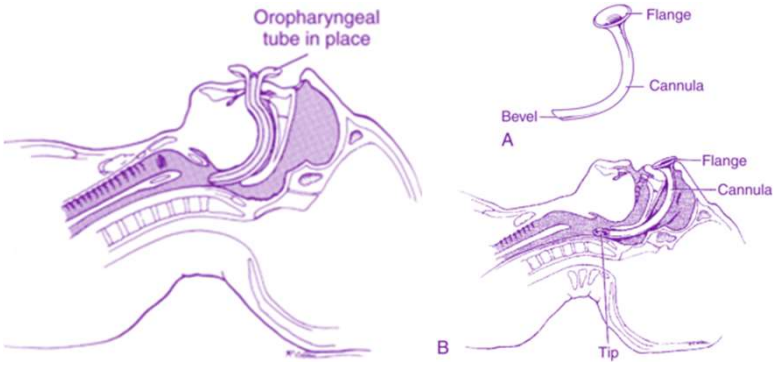


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So, now let's go back to the beginning of the suctioning process. You have arrived at a call with a situation that has a significant probability to require suctioning the patient. Here are the preparatory steps.
First, put on your PPE gear. Be sure to include protective eyewear, a mask, and disposable gloves.
Next, position yourself at the patient's head, and turn the patient's head, or their entire body to the side.
Hyperventilate the patient.
Prep your suction system gear for the procedure.
Assess the patient as we have already discussed.

Insert the Airway | OPA or NPA

- Review from prior lesson proper procedure
- May also insert the catheter without an NPA



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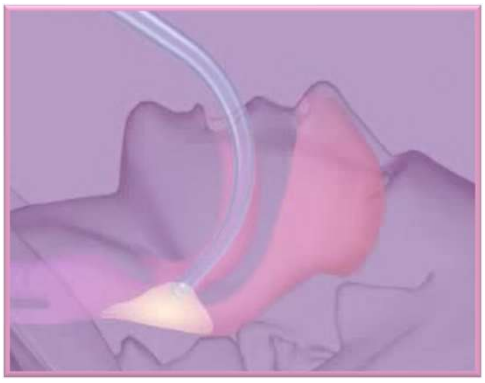
Now insert either an Oropharyngeal or Nasopharyngeal Airway. If inserting an O P A, open the mouth using the crossed finger technique. Now, insert the suction tip. The rigid tip catheter must be inserted following the pharyngeal curvature, with the suction OFF.

Note that there is usually a control hole on the tip. If not, you will need to crimp the suction hose to manage the flow of suction. Be sure to insert the catheter only as far as you properly measured it.

If using an NPA, follow the procedure from the last lesson. Note that you may also insert the catheter without an NPA.

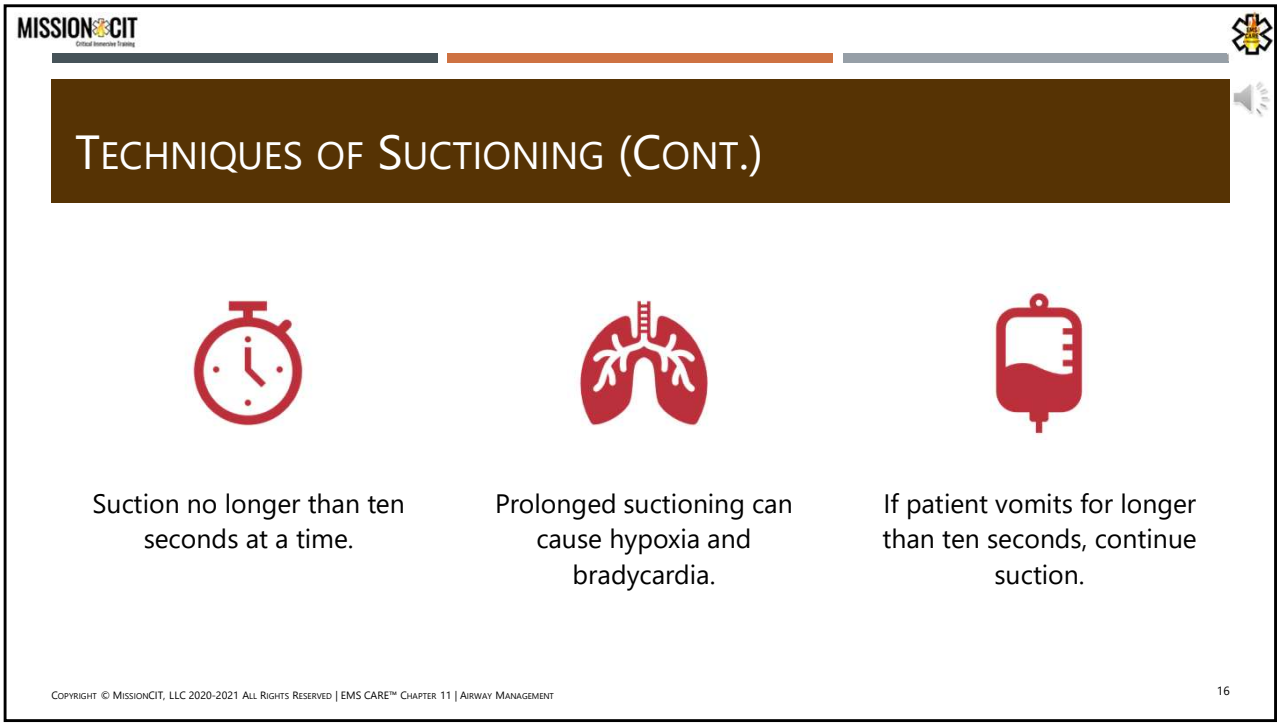
Techniques of Suctioning

- Place the tip or catheter where you want to begin suctioning and suction on the way out



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This diagram shows a Flexible suction catheter inserted in a secretion blocking the airway. The technique is to place tip or catheter where you want to begin suctioning and suction on the way out.
You will learn more about this in the upcoming video on O P A.

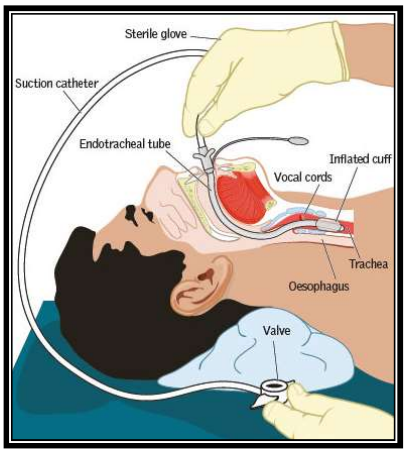


Continuing with suctioning techniques. The next three basics are:

1. Suction no longer than ten seconds at a time.
2. Be aware that prolonged suctioning can cause hypoxia and bradycardia.
3. If patient vomits for longer than ten seconds, continue suction.

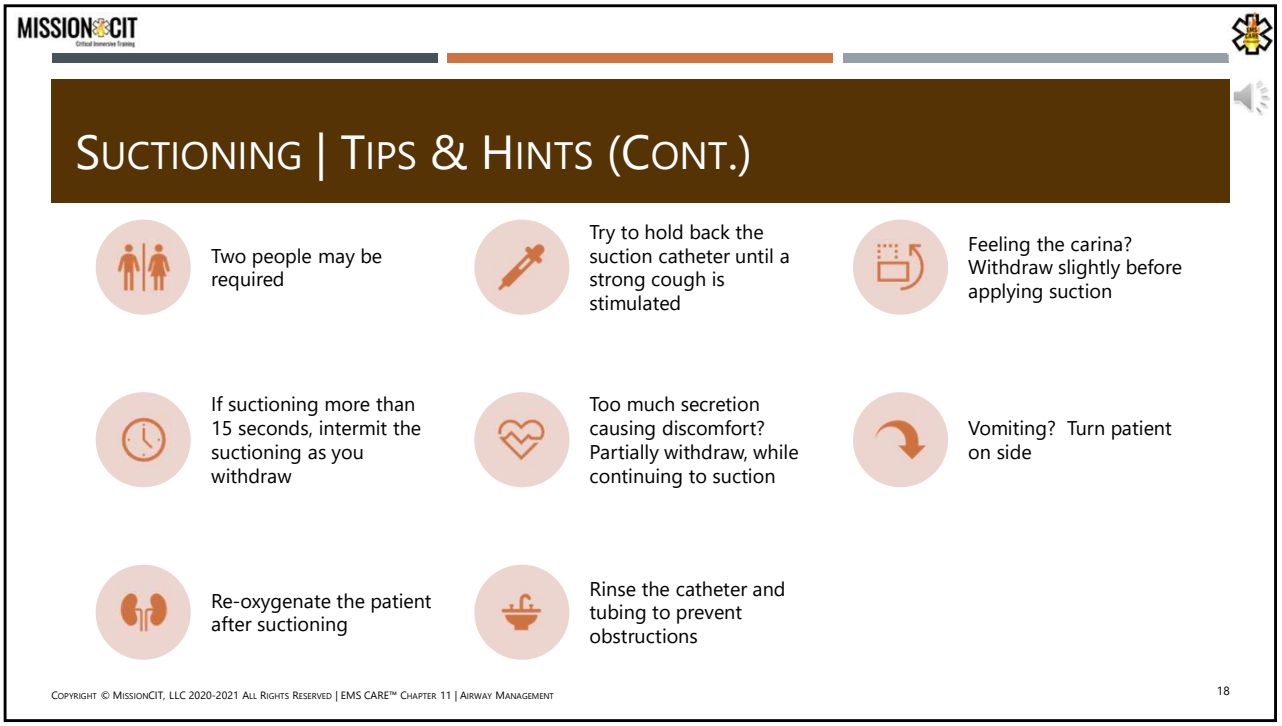
Suctioning | Tips & Hints

- Tilt head back
- Catheter is usually in the trachea if the patient coughs
- If difficult insertion
  - ✓ Reassess size of airway
  - ✓ Extend patient's neck
  - ✓ Lower head of the bed



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And here are three tips and hints when suctioning.
Try tilting the head back.
Next, if the patient starts coughing, it is likely that the catheter may be in the trachea.
And if you find difficulty inserting the catheter or the airway.
First, reassess the size of airway, then try to extend the patient's neck; and if possible, lower the head of the bed.



And here are some more hints and tips to consider,

1. Two people may be required. One to hold the airway in place and reassure the patient, while the other person performs the suction procedure.
2. You may be able to hold back the suction catheter until a strong cough is stimulated. However, In some cases, a cough may not be stimulated. In these cases, the catheter may be inserted further until secretions are tapped. However, it is important to remember the risk of spasm of the vocal cords, that temporarily makes it difficult to speak or breathe.
3. If the carina is felt, withdraw slightly before applying the suction.
4. Suction should not be longer than 15 seconds. Slowly intermit the suction as you withdraw the catheter.
5. If the patient appears distressed or large amounts of secretions are being suctioned, the catheter can be partially withdrawn. However, it may remain inside the pharynx, and oxygen reapplied. Do this until the patient has recovered and is ready to continue.
6. If vomiting occurs, be prepared to suction the patient's oropharynx and turn them on their side if necessary.
7. After suctioning, re-oxygenate the patient. If the patient is being artificially ventilated and needs to be suctioned again, you should continue to ventilate the

patient for two minutes and then suction again. Do this if needed for up to 15 seconds, and repeat in this manner.

8. If necessary, rinse the catheter and tubing with water to prevent obstructions of the tubing and catheter. A thorough cleaning of the equipment should be done as soon as possible after you arrive at the hospital.

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SUCTIONING – ORAL PHARYNGEAL VIDEO

- Suctioning – Oral Pharyngeal
- Why is it necessary to test the equipment prior to using it?
- How far should the catheter be inserted?
- When should an EMT apply suction to the catheter?
- What should an EMT do after suctioning is complete?
- Discuss the necessity of maintaining a clear airway



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So now, you are about to watch a video on Oral Pharyngeal Suctioning. As you watch, consider the following five questions,

1. Why is it necessary to test the equipment prior to using it?
2. How far should the catheter be inserted?
3. When should an EMT apply suction to the catheter?
4. What should an EMT do after suctioning is complete?
5. Discuss the necessity of maintaining a clear airway.

That's it for me now. Justin will be guiding you through the next lesson after the video.